

Date: Thursday, 02/10/2008 10:34:38 AM
 User: Julie Lecocq

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services	Drawing Name : BLADE FITTING
Job Number : 42415	
Estimate Number : 12300	
P.O. Number :	Part Number : D3488042
This Issue : 02/10/2008 S.O. No. :	Drawing Number : D3488 / DSK101
Prsht Rev. : NC	Project Number : N/A
First Issue : / / Type : MACHINED PARTS	Drawing Revision : B / D
Previous Run : 41206	Material :
Written By :	Due Date : 10/10/2008 Qty: 20 Um: Each
Checked & Approved By : <u>JLD 08.10.02</u>	
Comment : Est Rev:A New Issue 06-02-28 JLM	
Est Rev:B As per Rev B 06-03-30 JLM	
Est Rev:C Now On Doosan Lathe JLM Verified BY:DD	

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	D6103003	Round Billet, Aluminum
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Comment: Qty.: 1.0000 Each(s)/Unit Total: 20.0000 Each(s)

Alluminum Round Billet D6103-003

Batch: B 41965 X 16 pcs

B 41609 X 4 pcs

J.F. 08/10/10 (20)

2.0	DOOSAN LATHE	DOOSAN LATHE
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(Pb)

Comment: DOOSAN CNC LATHE

1-Turn as per Dwg DSK 101 & Folio FA627

2-Deburr

J.F. 08/10/10 (20)

3.0	QC2	INSPECT PARTS AS THEY COME OFF MACHINE
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Comment: INSPECT PARTS AS THEY COME OFF MACHINE

J.F. 08/10/10 (20)

4.0	HAAS1	HAAS CNC VERTICAL MACHINING #1
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Comment: HAAS CNC VERTICAL MACHINING #1

1-Machine as per Folio FA627 & Dwg D3488

2-Deburr

J.L. 08/10/10 (20)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D3488-042 PAR #: _____ Fault Category: _____ NCR: Yes (No) DQA: D Date: 08/10/09
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR: <u>42415</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
8/10/09	# 20	During machining it was found that chatter was on inside of bore. During removal of the chatter the	PH QSI 042 08.10.09	Acceptable deviation - see attached analysis	PH QSI 042 08.10.09	Sole/09	PH QSI 042 08.10.09	S 08/10/09
		2.150" Bore was machined to 2.175" .025 over nominal. PC chatter on inside from Boring			JF 08/10/09			

NOTE: Date & initial all entries

Date: Thursday, 02/10/2008 10:34:38 AM
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Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: BLADE FITTING

Job Number: 42415

Part Number: D3488042

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

QC2

INSPECT PARTS AS THEY COME OFF MACHINE



Comment: INSPECT PARTS AS THEY COME OFF MACHINE

J.L 08/10/18

6.0

QC8

SECOND CHECK



Comment: SECOND CHECK

SB 08/10/19

7.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

M-L

08/10/20

8.0

POWDER COATING

POWDER COATING



Comment: POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

START TIME:

OVEN TEMPERATURE:

FINISH TIME:

11:25
320 °F
11:55

M-L

08/10/20

9.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

FD 08/10/20

(20)

10.0

ALS71032225

INSERT



Comment: Qty.: 4.0000 Each(s)/Unit Total: 80.0000 Each(s)

Pick:

Qty Part Number Description Batch

4 ALS7-1032-225 Insert

M/00621

FD

11.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Install Inserts as per Dwg D3488

FD 08/10/20

(20)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 02/10/2008 10:34:39 AM
User: Julie Lecocq

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: BLADE FITTING

Job Number: 42415

Part Number: D3488042

Job Number:



Seq. #:

Machine Or Operation:

Description :

12.0

QC5

INSPECT WORK TO CURRENT STEP



countes

Comment: INSPECT WORK TO CURRENT STEP

08/10/20 (20)

13.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock
Location: FL-8

FZ 08/10/20 (20)

14.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08/10/21 JF

Job Completion



CMF 08-10-20

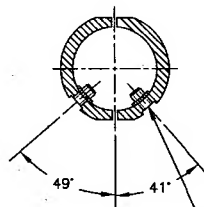
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

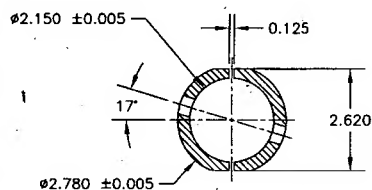
NOTE: Date & initial all entries



SECTION B-B

0.297
C'BORE 0.430 x 0.100
INSTALL ALS4-1032-225 (OR AKS4-1032-225
OR ALS7-1032-225 OR AKS7-1032-225)
INSERTS AFTER FINISH
(4 PLACES)

4



SECTION A-A

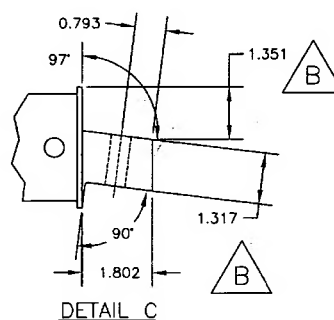
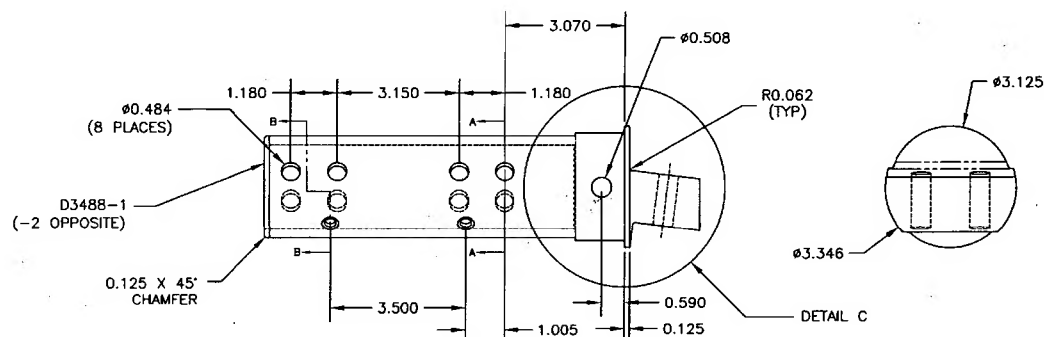
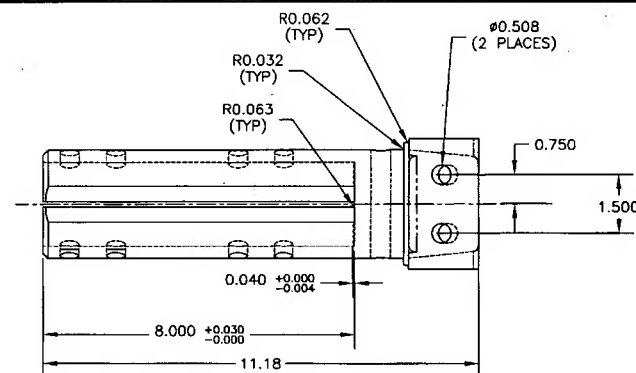
D3488-041/-042 BLADE FITTING ASSEMBLY PARTS LIST

QTY -041	QTY -042	PART NUMBER	DESCRIPTION
X	X	D3488-041	BLADE FITTING ASSEMBLY (LH)
		D3488-042	BLADE FITTING ASSEMBLY (RH)
1		D3488-1	BLADE FITTING (LH)
	1	D3488-2	BLADE FITTING (RH)
4	4	ALS4-1032-225 or AKS4-1032-225 or ALS7-1032-225 or AKS7-1032-225	INSERT

D3488-041/-042 BLADE FITTING

- MATERIAL: MAKE D3488-1/-2 FROM ALUMINUM 7075-T7351 ROUND BAR
PER QQ-A-225/9
(REF. DART MATERIAL SPEC M7075T73R)
- FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1
POWDER COAT WHITE (REF 4.3.5.1) PER DART QSI 005
- BREAK UNMARKED SHARP EDGES 0.010 TO 0.020
- INSTALL INSERTS AFTER POWDER COAT
- ALL DIMENSIONS ARE IN INCHES
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

NO
WORK ORDER
WITHOUT NOTICE
UNCONTROLLED COPY
ENGINEERING
RETURN TO
SHOP COPY



DETAIL C

D3488-041 SHOWN (D3488-042 OPPOSITE)

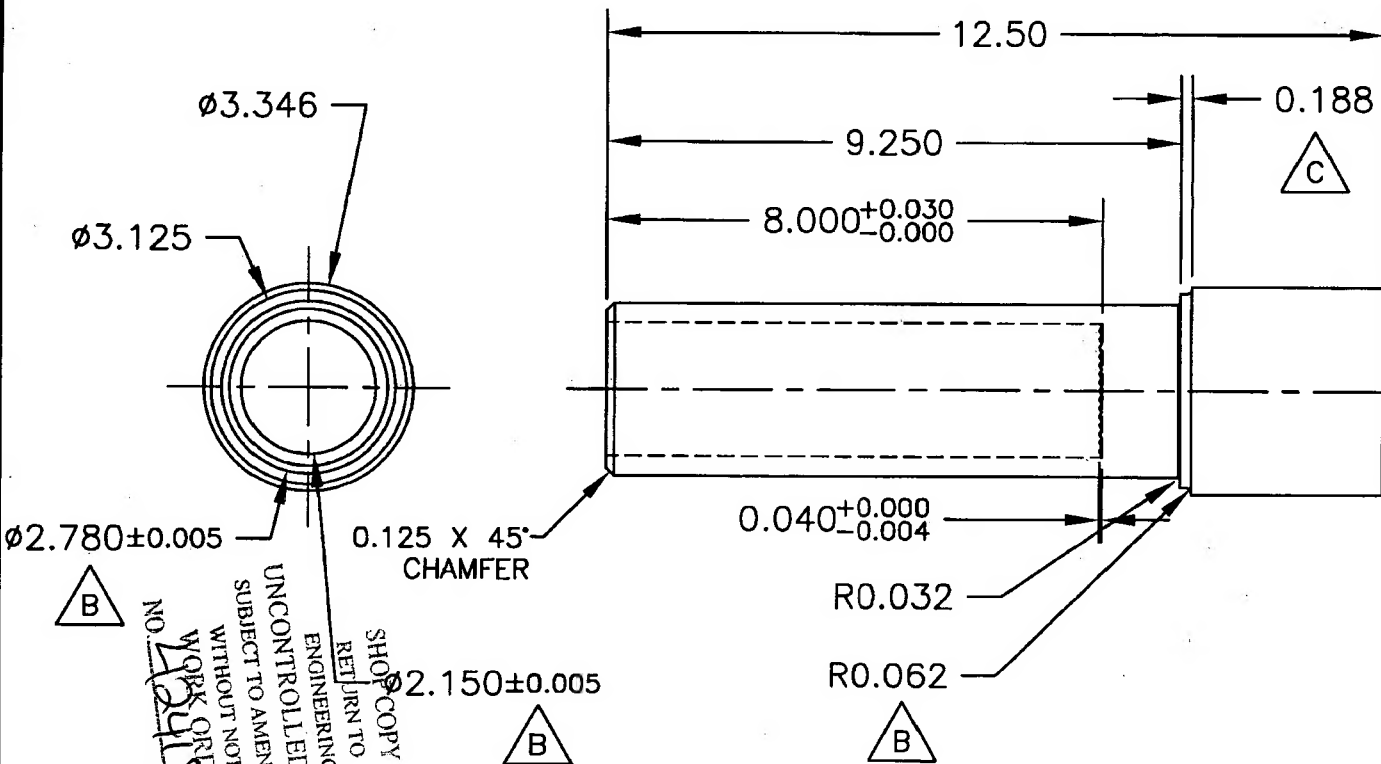
RELEASED
06.03.15 PH
PER DS
ECN #789

B	06.03.15	CHANGE THICKNESS
A	05.12.20	NEW ISSUE
DESIGN	PH	DART DART AEROSPACE USA, INC. PORT HADLOCK, WA
CHECKED	PH	DRAWING NO. D3488
DATE	06.03.15	TITLE BLADE FITTING
		SCALE 1:3

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PERSON WITHOUT WRITTEN PERMISSION FROM
DART AEROSPACE USA, INC.

DART

DESIGN	PH	DRAWN BY	PH	DART AEROSPACE USA, INC.	
				PORT HADLOCK, WA	
CHECKED	PH	APPROVED	PH	DRAWING NO.	REV. D
				DSK 101	SHEET 1 OF 1
DATE	06.05.09	TITLE	D3488-1/-2 TURNING DETAIL		
					SCALE 1:3
A	05.12.21	NEW ISSUE			
B	06.03.02	ADD TOLERANCES AND RADIUS			
C	06.04.17	0.188 WAS 0.125			
D	06.05.09	REMOVE DIAMETER FOR CHAMFER			



DSK 101

- 1) MATERIAL: MAKE FROM ALUMINUM 7075-T7351 ROUND BAR PER QQ-A-225/9 (REF. DART MATERIAL SPEC M7075T73R)
- 2) FINISH: NONE
- 3) BREAK UNMARKED SHARP EDGES 0.010 TO 0.020
- 4) ALL DIMENSIONS ARE IN INCHES
- 5) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED

Deviation for 03488-042 842415
 $\phi 2.175$ instead of $\phi 2.150$ *08-10-09*

For installation of the Apical Tri-bag and Apical Cylindrical Float bag systems onto OEM skid tubes; it is required that the OEM P/N 350A41-1077-24/-25 blade fitting be substituted with the Apical P/N 20473-7/-8 blade fitting. In the proposed Dart skid tube configuration, the Dart D3488-041/-042 blade fitting will replace the Apical P/N 20473-7/-8 blade fitting.

In the Dart system, blade fitting D3488-041/-042 will be used to transfer load into the web of the skid tube assembly. On the outside of the skid tube, D3488-041/-042 is dimensionally identical to the Apical P/N 20473-7/-8 blade fitting and is manufactured from the same 7075-T7351 material. Therefore, the Dart blade fitting and the Apical blade fitting have identical structural capability. The longitudinal location of the holes on the D3488-041/-042 blade fitting used to mount the aft crosstube are identical to the Apical P/N 20473-7/-8 blade fitting. On the inside of the skid tube, D3488-041/-042 has been designed to withstand higher bending moments than the Apical fitting.

The following table compares the Dart D3488-041/-042 blade fitting to the Apical 20473-7/-8 blade fitting.

Component	Dart D3488-041/-042	Apical P/N 20473-7/-8
Material	7075-T7351 per QQ-A-225/9	7075-T7351 per QQ-A-225/9
(I) Moment of Inertia of portion inside skid tube	1.620 in ⁴ (from D3488-041/-042 dwg)	1.567 in ⁴ (from D20473-7/-8 dwg)
(C) Distance to outer fibers	1.310 in (from D3488-041/-042 dwg)	1.445 in (from 20473-7/-8 dwg)
(A) Area at section A-A	2.280 in ²	1.792 in ²
Z=I/C at section A-A	1.234 in ³	1.084 in ³
D	10.69 in	10.53 in

w/
deviation

1.573

1.310

2.199

1.201

N/C

ϕ
 Dart is still greater I, C, A, I/C, D
 - acceptable deviation

